

Serial No.: 09/245,625

Claims 20-22 are drawn to a method for preparing a fiber comprising an elastomeric polymer and an effective amount of a chemotherapeutic agent.

B. Rejection under 35 U.S.C. § 102(b)

Claim 1 was rejected under 35 U.S.C. § 102(b) as anticipated by Hill, U.S. Patent 5,098,711 ("Hill"). This rejection is respectfully traversed.

The Office asserts that the "polymers of [Hill] are the same as those of the instant claims." Paper 5, page 2, lines 20-21. The Office position is stated as follows:

[W]hile applicants assert that none of the polymers of Hill are elastomeric polymers, the instant specification discloses that nylon (which is disclosed by Hill) is an elastomeric polymer. Indeed, in cancelled claim 24 applicants claimed nylon as the intended polymer. Furthermore, Merriam-Webster's Collegiate dictionary (10th edition) defines "elastomer" as "any of various elastic substances resembling rubber <polyvinyl ~s>." Nylon is a polyvinyl polymer. Thus, the nylon polymer of Hill is the same as the instant invention (claim 1).

Paper 7, page 2, lines 1-5 (emphasis added).

The Office asserts that nylon is a an "elastomer" because it is a "polyvinyl polymer." This assertion is respectfully traversed. Nylon is a well-known polyamide condensation polymer, not a "polyvinyl polymer."

Attention is directed to the entry for "Nylon" from The Merck Index, 10th Ed., Merck & Co., Rahway, N.J., 1983, p. 967, a copy of which is enclosed. This entry indicates that "nylon" is a "polyamide." and that nylon is a generic term used to describe "a manufactured fiber in which fiber-forming substances are any long-chain synthetic polyamide having recurring polyamide groups (-CONH-) as an integral part of the polymer chain." Nylons are further described as crystalline solids characterized by low specific gravity, high strength, durability, high flexibility,

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and high tensile strength.

Attention is directed to Table 29-1, "Representative Synthetic Thermoplastic and Elastic Polymers and Their Uses," from Basic Principles of Organic Chemistry, J.D. Roberts and M.C. Caserio, Benjamin, New York, 1965, pp. 1095-1097, a copy of which is enclosed. The last entry in the table indicates that nylon is a crystalline polymer prepared by anionic condensation of a hexamethylenediamine adipic acid salt.

Attention is directed to Table 25.1, "Commercial Polymers," from Organic Chemistry, D.J. Cram and G.S. Hammond, McGraw-Hill, New York, 1959, pp. 594-595, a copy of which is enclosed. Nylon (adipic acid-hexamethylenediamine) appears as entry #12 under the heading "Condensation Polymers." Note that "Vinyl Polymers" and "Synthetic Elastomers" are separate listings in the Table.

The Office also asserts that "the instant specification discloses that nylon is an elastomeric polymer." This assertion is respectfully traversed. If this rejection is maintained, the Examiner is respectfully requested to identify the specific passage of the specification on which the Office relies to support this assertion.

Contrary to the Office position, nylon is not a polyvinyl polymer. Therefore, the polymers of Hill are not the same as those recited in applicants' claims. Rejection of claim 1 as anticipated by Hill is improper and should be withdrawn.

If the Office position that nylon is an "polyvinyl polymer" is maintained, the Examiner is respectfully requested to support this position by placing on the record a copy of a reference generally accepted in the field of organic chemistry or in the field of polymer chemistry, such as a handbook, textbook, or treatise, or to place on the record an affidavit under 37 C.F.R. § 1.104(d)(2).

C. Rejection under 35 U.S.C. § 103(a)

Claim 1-22 and 25-29 were rejected under 35 U.S.C. § 103(a) as unpatentable over Burch, U.S. Patent 5,433,226 ("Burch"), in view of Hill. This rejection is respectfully traversed.

1. The references cannot be combined in the manner indicated by the Office

Burch discloses a dental floss comprising a fiber having a core of a segmented polymer. Abstract.

As discussed above, the polymers of Hill are not the same as those disclosed by Burch.

The Office has not made the *prima facie* case. Hill and Burch can not be combined in the manner indicated by the Office. Hill discloses dental floss made of nylon, a polyamide. Burch discloses a dental hygiene product comprising a fiber having a core of a segmented polymer and soft segments and hard segments that are occasionally linked by covalent bonds. These polymers have different chemical structures. Consequently, they have different properties. Therefore, the references can not be combined in the manner indicated by the Office to produce applicants' invention. Rejection of claims 1-22 and 25-29 as unpatentable over Burch in view of Hill is improper and should be withdrawn.

2. The combination of Hill and Burch does not produce applicants' invention

If, for the sake of argument the references are combined in the manner indicated by the Office, they do not produce applicants' invention.

The Office relies on Hill:

for teaching nylon dental floss with chemotherapeutic agents such as penicillin, sodium fluoride, stannous fluoride, or chlorhexidine are

impregnated within the nylon dental floss by dipping the floss into an agitated bath containing the therapeutic agent.

Paper 5, page 3, lines 14-17 (emphasis added).

To support this assertion, the Office asserts:

[T]hat polymers of [Hill] are the same as those of the instant claims and that the same process is used to incorporate the active ingredients into the fibers (i.e. placing the floss into a bath containing active agent). Accordingly the active agent would be imbibed within the fiber.

Paper 5, page 2, lines 20-22.

The Office asserts that because Hill and applicants each use the same process and the same polymers, the active agent in Hill would be imbibed within the fiber. This assertion is respectfully traversed.

As discussed above, the polymers of Hill are not the same as those of Burch. Further, Hill does not teach that chemotherapeutic agents "are impregnated within the nylon dental floss by dipping the floss into an agitated bath containing the therapeutic agent." Hill teaches loading the active agent into the interstitial spaces between the strands of a multistrand nylon fiber. Hill, column 13, lines 58-62. Applicants, not Hill, teach that active agents are imbibed in a fiber having a core of a segmented polymer.

The Office has not made the *prima facie* case. The polymers of Hill are not the same as those of Burch. The Office admits that Burch does not disclose impregnating fibers with chemotherapeutic agents. Paper 5, page 3, lines 13-14. Hill does not disclose impregnating fibers with chemotherapeutic agents. Therefore, combination of the references in the manner indicated by the Office does not produce applicants' invention. Rejection of claims 1-22 and 25-29 as unpatentable over Burch in view of Hill should be withdrawn.

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3. *Applicants results are unexpected*

Further, if for the sake of argument Hill and Burch are combined in the manner indicated by the Office, applicants' results are unexpected. Example 1 shows that a spandex fiber takes up 2300 ppm of fluoride. Comparative Example 1 shows that a conventional dental floss takes up 385 ppm of fluoride. As noted in Comparative Example 1, J. Jørgensen, *et al.*, Pediatric Dentistry, 11(1), 17-20 (1989), in which a conventional dental floss was immersed in fluoride-containing dental products, report uptakes of 201 ± 19 ppm and 248 ± 17 ppm of fluoride for the conventional dental floss. Rejection of claims 1-22 and 25-29 as unpatentable over Burch in view of Hill should be withdrawn.

D. Extension of Time

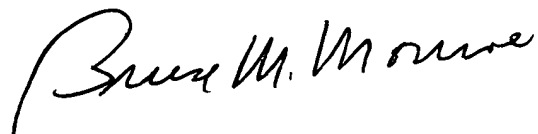
A check for a one-month extension of time accompanies this response. Pursuant to 37 C.F.R. § 1.136(a)(3), the Commissioner is requested to treat this check as a constructive petition for an extension of time. A separate petition for an extension of time has not been enclosed. The Commissioner is hereby authorized to charge any additional fee required in connection with this response and to credit any overpayment to Deposit Account No. 18-0350 (Ratner & Prestia).

E. Conclusion

It is respectfully submitted that the claims are in condition for immediate allowance and a notice to this effect is earnestly solicited. The Examiner is invited to phone applicants' attorney if it is believed that a telephonic or personal interview would expedite prosecution of the application.

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Respectfully submitted,

A handwritten signature in black ink, reading "Bruce M. Monroe". The signature is written in a cursive style with a large, sweeping initial "B".

Bruce M. Monroe
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Date March 30, 2001

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Table 29-1 Representative Synthetic Thermoplastic and Elastic Polymers and Their Uses^a


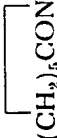
Monomer(s)	Formula	Type of polymerization	Physical type	T_g , °C	T_m , °C	Trade names	Uses
ethylene	$\text{CH}_2=\text{CH}_2$	radical (high pressure)	semi-crystalline	<<0	110	polyethylene, Alathon	film, containers, piping, etc.
vinyl chloride	$\text{CH}_2=\text{CHCl}$	Ziegler radical	crystalline	-120	130		
vinyl fluoride	$\text{CH}_2=\text{CHF}$	radical	atactic, semi-crystalline	80	180	polyvinyl chloride, Geon	film, insulation, piping, etc.
vinyl chloride vinylidene chloride	$\text{CH}_2=\text{CHCl}$ $\text{CH}_2=\text{CCl}_2$	radical	atactic, semi-crystalline	45		Tedlar	coatings ^b
chlorotrifluoroethylene	$\text{CF}_2=\text{CFCl}$	radical	crystalline	variable		Saran	tubing, fibers, film
tetrafluoroethylene	$\text{CF}_2=\text{CF}_2$	radical	atactic, semi-crystalline	<<0	210	Kel-F	gaskets, insulation ^c
propylene	$\text{CH}_2=\text{CHCH}_3$	Ziegler	crystalline	<-100	330	Teflon	gaskets, valves, insulation, filter felts, coatings ^d
ethylene propylene 1,4-hexadiene	$\text{CH}_2=\text{CH}_2$ $\text{CH}_2=\text{CHCH}_3$ $\text{CH}_2=\text{CHCH}_2\text{CH}=\text{CHCH}_3$	Ziegler	isotactic, crystalline	-20	175		fibers, molded articles
hexafluoropropylene vinylidene fluoride	$\text{CF}_2=\text{CFCF}_3$ $\text{CH}_2=\text{CF}_2$	radical	amorphous	-55		Nordel	rubber articles
			amorphous	-23		Viton	rubber articles ^e

Continued on p. 1096

Table 29-1 Representative Synthetic Thermoplastic and Elastic Polymers and Their Uses^a (Continued)

Monomer(s)	Formula	Type of polymerization	Physical type	T_g , °C	T_m , °C	Trade names	Uses
isobutylene	$\text{CH}_2=\text{C}(\text{CH}_3)_2$	cationic	amorphous	-70		Vistanex, Oppanol	pressure-sensitive adhesives
isobutylene isoprene	$\text{CH}_2=\text{C}(\text{CH}_3)_2$ $\text{CH}_2=\text{C}(\text{CH}_3)\text{CH}=\text{CH}_2$	cationic	amorphous			butyl rubber	inner tubes
chloroprene	$\text{CH}_2=\text{C}(\text{Cl})\text{CH}=\text{CH}_2$	radical	amorphous	-40		Neoprene	rubber articles ^e
isoprene	$\text{CH}_2=\text{C}(\text{CH}_3)\text{CH}=\text{CH}_2$	Ziegler, Li	amorphous (<i>cis</i> -1,4)	-70	28	natural rubber, Ameripol, Coral rubber	rubber articles
styrene	$\text{CH}_2=\text{CHC}_6\text{H}_5$	radical	atactic, semi-crystalline	85	<200	Styron, Lustron	molded articles, foam
styrene	$\text{CH}_2=\text{CHC}_6\text{H}_5$	Ziegler	isotactic, crystalline	100	230		
vinyl acetate	$\text{CH}_2=\text{CHO}_2\text{CCH}_3$	radical	amorphous	40		polyvinyl acetate	adhesives
vinyl alcohol	$(\text{CH}_2=\text{CHOH})^f$	hydrolysis of polyvinyl acetate	crystalline		dec.	polyvinyl alcohol	water-soluble adhesives, paper sizing
vinyl butyral	$\left(\begin{array}{c} \text{CH}_2=\text{CH} \\ \quad \\ \text{CH}=\text{CH} \\ \quad \\ \text{O} \quad \text{O} \\ \quad \\ \text{CH} \quad \text{CH} \\ \quad \\ \text{C}_3\text{H}_7 \end{array} \right)^f$	polyvinyl alcohol and butyraldehyde	amorphous			polyvinyl butyral	safety-glass laminate

formaldehyde $\text{CH}_2=\text{O}$ anionic crystalline 179 Delrin molded articles

formaldehyde	$\text{CH}_2=\text{O}$	anionic	crystalline	179	Delrin	molded articles
acrylonitrile	$\text{CH}_2=\text{CHCN}$	radical	crystalline	100 ^g >200	Orlon	fiber
methyl methacrylate	$\text{CH}_2=\text{C}(\text{CH}_3)\text{CO}_2\text{CH}_3$	radical	atactic amorphous	105	Lucite, Plexiglas	coatings, molded articles
		anionic	isotactic crystalline	115	200	
		anionic	syndiotactic, crystalline	45	160	
ethylene terephthalate	HO_2C  $\text{CO}_2\text{C}_2\text{H}_4\text{OH}$	ester interchange between di-methyl terephthalate and ethylene glycol	crystalline	56	260	Dacron, Mylar, Cronar, Terylene
ε-caprolactam	 $(\text{CH}_2)_5\text{CONH}$	anionic	crystalline	50	225	Perlon, fibers, molded articles
hexamethylenediamine	$\text{NH}(\text{CH}_2)_6\text{NH}_2$	anionic	crystalline	50	270	nylon, fibers, molded articles
adipic acid salt	$\text{CO}(\text{CH}_2)_4\text{CO}_2\text{H}$	condensation				

^a Much useful information on these and related polymers is given by F. W. Billmeyer, Jr., "A Textbook of Polymer Chemistry," Interscience, New York, 1957; J. K. Stille, "Introduction to Polymer Chemistry," Wiley, New York, 1962; F. Bueche, "Physical Properties of Polymers," Interscience, New York, 1962, and W. R. Sorenson and T. W. Campbell, "Preparative Methods of Polymer Chemistry," Interscience, New York, 1961.

^b Exceptional outdoor durability.

^c Used where chemical resistance is important.

^d Excellent self-lubricating and electrical properties.

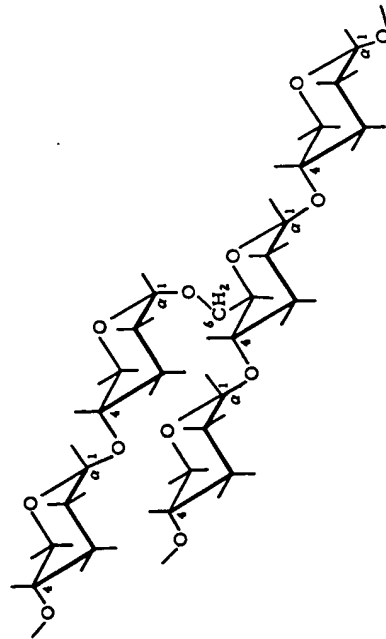
^e Used particularly where ozone resistance is important.

^f These monomers are not the starting materials used to make the polymers, which are actually synthesized from polyvinyl alcohol.

^g T_g is 60° when water is present.



Basic Principles



W. A. BENJAMIN, INC.

of Organic Chemistry

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CALIFORNIA INSTITUTE OF TECHNOLOGY

1965 NEW YORK · AMSTERDAM

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Organic Chemistry*

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Peterson, who drew many of the illustrations*

W. A. Benjamin, Inc.
NEW YORK, NEW YORK

TABLE 25.1 Com

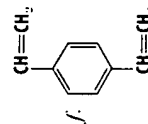
Monomer units	Trade names
CONDENSATION POLYMERS	
1. Phenol-formaldehyde	Bakelite, Phenolic, Durez, Insurok, Durite, Makalot, Heresite, Neillite, Resinox, Textolite
2. <i>p</i> -Substituted phenol-formaldehyde	Bakelite, Phenolic, Durez, Amberol, Super Beckacite
3. Furfural-phenol	Durite
4. Resorcinol-formaldehyde	Penacolite
5. Urea-formaldehyde	Beetle, Plascon, Uformite
6. Urea-butanol-formaldehyde	Beetle, Uformite, Beckamine
7. Melamine-formaldehyde	Melmac, Catalin Melamine, Plascon Melamine, Melantene, Resimine
8. Melamine-butanol-formaldehyde	Melmac, Uformite
9. Aniline-formaldehyde	Gibanite, Dilectene
10. Phenolsulfonic acid-formaldehyde	Amberlite, Dowex (ion exchange)
11. Urea-ethylenediamine-formaldehyde	Amberlite (anion exchange)
12. Adipic acid-hexamethylenediamine	Nylon
13. Phthalic anhydride-glycerol-linoleic acid	Glyptal, Rezyl, Duraplex
14. Sebacic acid-ricinoleic acid-glycerol	Paraplex
15. Ethylene oxide	Carbowax, Epon Resins
16. Dimethyldihydroxysilane	Silastic, Silicone Rubber
17. Methylchlorosilane-dimethylchlorosilane	Silicon Resin
18. Furfuryl alcohol	Resin X, Duralon, Furetone
VINYL POLYMERS	
1. Ethylene	Polythene
2. Tetrafluoroethylene	Teflon
3. Styrene	Bakelite Polystyrene, Chemaco Polystyrene, Loalin, Lustron, Styron, Styramic

Problems

1. Write equations which illustrate each of the following:
 - a.* Condensation polymerization
 - b.* Addition polymerization
 - c.* Chain transfer
 - d.* Initiation of polymerization by an organometallic compound
 - e.* Photochemical initiation of polymerization
 - f.* Formation of a cross-linked polymer
 - g.* Use of carbohydroxylation in peptide synthesis
 - h.* Enzymolysis of a polysaccharide
 - i.* Copolymerization
 - j.* End-group marking with DNP

2. Each of the following compounds has one or more specialized uses in some branch of polymer chemistry. Speculate as to the use of each.

- a. $n\text{-C}_4\text{H}_9\text{SH}$
b. $(\text{C}_6\text{H}_5)_3\text{CH}(\text{C}_6\text{H}_5)_2$
c. $(\text{HOCH}_2)_3\text{C}[\text{Pentaerythritol}]$
d. Di-*n*-butyl phthalate
e. A mercury-vapor lamp



3. Explain the following facts:
- Acrylic anhydride, $[(CH_2=CHCO)_2O]$ polymerizes to give a soluble (not cross-linked) polymer which contains no residual unsaturation.
 - Vinylbenzquinone does not polymerize.
 - Nitroglycerine $[O_2NOCH_2CH(ONO_2)CH_2ONO_2]$ is an excellent plasticizer for nitrocellulose (formed by the action of nitric acid on cellulose).

Organic Chemistry

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California Institute of Technology

McGraw-Hill BOOK COMPANY, INC.

New York Toronto London 1959

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III

The text typeface of this book is Bodoni Book; the chemical symbols and formulas, Futura Demibold Condensed. The type has been set directly on film by the Intertype Fotosetter. Felix Cooper is the illustrator.



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The first few and uses of the tions are intro groups and to s mination. Cha and molecular- in terms of bon bonds, symmet compounds. C

our experimen organic chemi use of such a l thoroughly unc were best tau; the results of pattern could l of fact and the nomical and r have tried to l In course elementary or problem, the assumed an e tant classes c wise self-consi difficult. In concepts into elementary c has created s The remarkal

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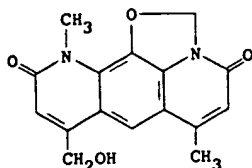
THERAP CAT (VET): Has been used as a topical astringent.

6575. Nux Vomica. Quaker buttons; bachelor's buttons; poison nut; dog buttons; vomit nut. Dried, ripe seeds of *Strychnos nux-vomica* L., *Loganiaceae*. *Habit.* Southern Asia, Northern Australia. *Constit.* 1-1.4% strychnine, about an equal amount of brucine; strychnicine, loganin, caffeotannic (igasuric) acid, proteins. Nux vomica from Saigon contains 1.6-2% strychnine. *Caution:* Extremely poisonous.

THERAP CAT: Formerly as bitter tonic.

THERAP CAT (VET): Has been used as a bitter tonic.

6576. Nybomycin. 8-(Hydroxymethyl)-6,11-dimethyl-2H,4H-oxazolo[5,4,3-ij]pyrido[3,2-g]quinoline-4,10(11H)-dione; 6,11-dimethyl-8-(hydroxymethyl)pyrido[3,2-g]oxazolo[5,4,3-ij]quinoline-4,10(2H,11H)-dione. $C_{18}H_{14}N_2O_4$; mol wt 298.29. C 64.42%, H 4.73%, N 9.39%, O 21.46%. Antibiotic substance produced by *Streptomyces* A 717 isolated from Missouri soil: Strelitz *et al.*, *Proc. Nat. Acad. Sci. USA* 41, 620 (1955); Eble *et al.*, *Antibiot. & Chemother.* 8, 627 (1958); Brock, Sokolski, *ibid.* 631. Structure: Rinehart, Renfro, *J. Am. Chem. Soc.* 83, 3729 (1961). Revised structure: Rinehart *et al.*, *ibid.* 92, 6994 (1970). Total synthesis of deoxynybomycin: Forbis, Rinehart, *ibid.* 6995. Total synthesis of nybomycin: *idem*, *J. Antibiot.* 24, 326 (1971); *idem*, *J. Am. Chem. Soc.* 95, 5003 (1973).

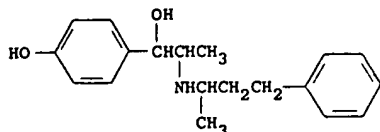


Needles from acetic acid, mp 325-330°. Sublimes at 250° (15 mm). Optically inactive. uv max (ethanol): 266, 285 nm. Soluble in concd acids. Very slightly sol in water, alkalis, and common organic solvents. Shows antiphage and antibacterial properties. LD₅₀ i.p. in mice: 650 mg/kg. Brock, Sokolski, *loc. cit.* ¹³C NMR spectrum: A. M. Nadzan, K. L. Rinehart, *J. Am. Chem. Soc.* 99, 4647 (1977).

Acetate, $C_{18}H_{16}N_2O_5$, crystals from chloroform + ethanol, mp 236-237°.

Succinate, $C_{20}H_{18}N_2O_7$, crystals from dimethylformamide. Practically insol in water.

6577. Nyldrin. 4-Hydroxy- α -[1-[(1-methyl-3-phenylpropyl)amino]ethyl]benzenemethanol; *p*-hydroxy- α -[1-[(1-methyl-3-phenylpropyl)amino]ethyl]benzyl alcohol; *p*-hydroxy-*N*-(1-methyl-3-phenylpropyl)norephedrine; buphenine; 1-(*p*-hydroxyphenyl)-2-(1'-methyl-3'-phenylpropylamino)-1-propanol; phenyl-*sec*-butyl norsupifen. $C_{19}H_{23}NO$; mol wt 299.40. C 76.22%, H 8.42%, N 4.68%, O 10.69%. Prepn: Fr. pat. 968,273 (1950 to Troponwerke Dinklage); Brit. pats. 669,574-5 (1952); *Chem. & Eng. News* 33, 2896 (1955); Kütz, Schöpf, U.S. pats. 2,661,372-3 (1953). Pharmacology: T. T. Yen, D. V. Pearson, *Res. Commun. Chem. Pathol. Pharmacol.* 23, 11 (1979); B. Fichtl, W. Felix, *Eur. J. Pharmacol.* 65, 333 (1980).

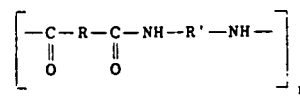


Crystals from methanol, mp 111-112°. Hydrochloride, $C_{19}H_{23}ClNO$, SKF-1700-A, Arlidin, Bufedon, Buphedrin, Dilatal, Dilatropin, Dilatrin, Opino, Penitardon, Perdilatal, Rudilin, Rydrin, Tocodilydrin, Tocodrin. Crystals. Sparingly sol in water; slightly sol in alcohol. Practically insol in ether, chloroform, benzene.

THERAP CAT: Vasodilator (peripheral).

6578. Nylon. Polyamide. Generic term used to describe "a manufactured fiber in which fiber-forming substances are any long-chain synthetic polyamide having recurring polyamide groups (—CONH—) as an integral part of the poly-

mer chain". Formed from various combinations of diacids, diamines, and amino acids. May be formed also by addition polymerization. The linear polyamides have achieved the greatest commercial success. Shorthand nomenclature of nylons involves the use of numbers: a single numeral indicating the number of carbon atoms in a monomer, e.g. nylon 6; two numbers indicating a polymer formed from diamines and dibasic acids, the first numeral indicating the number of carbon atoms separating the nitrogen atoms of the diamine, the second indicating the number of straight-chain carbon atoms in the dibasic acid, e.g. nylon 6,6. First produced by E. I. du Pont de Nemours & Co. according to patents of W. H. Carothers. The name nylon was dedicated to public domain on Oct. 27, 1938 at the Herald Tribune Forum where the product itself was announced. Reviews: R. W. Moncrieff, *Man-made Fibres* (John Wiley, New York, 1963) pp 335-355; several authors in Kirk-Othmer *Encyclopedia of Chemical Technology* vol. 16 (Interscience, New York, 2nd ed., 1968) pp 1-105; Snider, Richardson, "Polyamide Fibers" in *Encyclopedia of Polymer Science and Technology* vol. 10 (Interscience, New York, 1969) pp 347-460. Book: *Nylon Plastics*, M. I. Kohan, Ed. (Wiley-Interscience, New York, 1973).

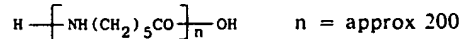


Crystalline solids characterized by low specific gravity, high strength, durability, high flexibility, and high tensile strength. Soluble in phenol, cresols (especially *m*-cresol), xylene, formic acid. Insoluble in alcohols, esters, ketones, hydrocarbons. Hydrolysis and degradation occur at higher temperatures, esp in the melt. Stable to aqueous alkali. Degrades rapidly in aqueous acids. Undergoes photodegradation.

USE: In production of synthetic fibers for various textile and domestic uses.

THERAP CAT: Surgical aid (nonabsorbable suture).

6579. Nylon 6. Poly[imino(1-oxo-1,6-hexanediyl)]; poly(iminocarbonylpentamethylene); Caprolan; Enkalon; Grilon; Kapron; Mirlon; Perlon; Phrlon; Amilan. Linear polymer obtained by polymerization of ϵ -caprolactam, *q.v.*: Schlack, U.S. pat. 2,241,321 (1941 to I. G. Farbenind.). The importance of this fiber increased with the discovery that caprolactam can be produced by the nitrosation of cyclohexanecarboxylic acid: Muench *et al.*, U.S. pats. 3,022,291 and 3,108,096 (1962, 1963, both to Snia Viscosa). Review: R. W. Moncrieff, *Man-Made Fibres* (John Wiley & Sons, New York, 1963) pp 335-355; H. K. Reimschuessel, *J. Polym. Sci., Macromol. Rev.* 12, 65-139 (1977).



Softens at 210° and melts at 223°. Can withstand a temp of 100° for long periods of time. d_4^{20} 1.14. Moisture regain is about 4%. Swelling is low; if steeped in water and then centrifuged its volume increases by about 13-14%. Immune to microbiological attack. Resistant to most org chemicals, but dissolved by phenol, cresol, and strong acids.

USE: Tire cord; fishing lines; tow ropes; hose manuf; woven fabrics.

6580. Nystatin. Fungicidin; Biofanal; Diastatin; Candex; Candio-Hermal; Mycostatin; Moronal; Multilind; Nystan; Nystavescent; O-V Statin. Polyene antifungal antibiotic complex produced by *Streptomyces noursei*, *S. aureus* and other *Streptomyces* spp: Hazen, Brown, *Science* 112, 423 (1950); *Proc. Soc. Exp. Biol. Med.* 76, 93 (1951); Raubitschek *et al.*, *Antibiot. & Chemother.* 2, 179 (1952); Cohen, Webb, *Arch. Pediatrics* 69, 414 (1952); Dutcher *et al.*, *Antibiot. Ann.* 1953-1954, 191; *idem*, *Therapy of Fungus Diseases* (Little, Brown, Boston, 1955) p 168. Review of early literature: Brown, Hazen, *Trans. N.Y. Acad. Sci., Ser. II*, 19 (1956-1957) pp 447-456. Purification: Vandeputte, U.S. pat. 2,832,719 (1958 to Olin Mathieson); Renella, U.S. pat. 3,517,100 (1970 to Am. Cyanamid). Chemistry and partial

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